

## Message Text

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JFKRATZ/AEC

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FM SECSTATE WASHDC

TO USMISSION OECD PARIS

INFO AMEMBASSY MOSCOW

C O N F I D E N T I A L STATE 110160

E.O. 11652: XGDS-1

TAGS: ESTC, COCOM, UR

SUBJECT: EXPORT OF A COMPLETE ACETIC ACID PLANT TO THE USSR -  
IL 1131, IL 1142, IAE-8, IL 1670, AND IL 1133

REF: BEWT CASE NOS. A. 097282 B. 097283 C.097284

D. 097286 E.097287 F. 097288

EXCON

THE UNITED STATES DELEGATION IS REQUESTED TO SUBMIT THE  
FOLLOWING EXCEPTION CASE UNDER URGENCY PROCEDURE PURSUANT TO  
COCOM DOC REG (73)3, PARAGRAPH 4(B):

1. THE UNITED STATES AUTHORITIES HAVE BEEN ASKED TO APPROVE  
THE EXPORT TO THE USSR OF AN ACETIC ACID PLANT VALUED  
AT DOLS 41 MILLION OF WHICH DOLS 2,184,470 IS COMPOSED OF  
COMPONENTS COVERED UNDER THE IL RATED ITEMS LISTED  
BELOW:

A. IL 1131 - DOLS 259,000:

2 TYPE GA-1102 A AND S REACTOR EFFLUENT SEPARATOR BOTTOMS PUMP  
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1 TYPE GA -1104 START-UP HEATER CIRCULATION PUMP

1 LOT SPARE PARTS

B. IL 1142 - DOLS 120,000:

1 LOT OF VALVES, TUBES, PIPES AND FITTINGS

C AND E. IAE-8-DOLS 564,750:

C. 8,250 LBS ZIRCONIUM PIPE AND SPARE PARTS,

E. 1 TYPE DC-1403 PROMOTER REACTOR

1 TYPE EA-1102 START-UP HEATER

1 LOT FRACTIONATING COLUMN TRAYS, BOLTS AND NUTS FOR  
DA-1201(14 PIECES) AND DA-1202 (50 PIECES)

D. IL 1670 - DOLS 25,000:

1 TYPE EA-1403 PROMOTER REACTOR CONDENSER

1 TYPE EA-1404 PROMOTER SUBCOOLER

F. IL 1133 - DOLS 1,215,520:

20 TYPE 300# SERIES FLANGED CONTROL VALVES

76 TYPE 150# AND 300# SERIES BLOCK COCK VALVES

4 TYPE 150# AND 300# SERIES BALL OR SWING CHECK VALVES

2. THIS EQUIPMENT IS CONSIGNED TO THE MINISTRY OF CHEMICAL  
INDUSTRY, MOSCOW WHERE IT WILL BE USED FOR A PLANT DESIGNED  
TO PRODUCE 150,000 METRIC TONS OF ACETIC ACID PER YEAR.  
ADDITIONALLY, ONE IBM 1800 DIGITAL COMPUTER SYSTEM AND ONE  
1231 A/D CONVERTER ALSO FOR USE IN THE  
PLANT WERE PREVIOUSLY APPROVED (SEE COCOM DOC (74)567).

3. THE REACTION SYSTEM: THIS SYSTEM IS SOMEWHAT ADVANCED  
IN DESIGN BY THE SELECTION OF BETTER CONSTRUCTION MATERIALS,  
I.E. ZIRCONIUM (NOTE: HAFNIUM CONTENT OF ALL ZIRCONIUM  
COMPONENTS INCLUDED IN THIS PLANT PACKAGE WILL BE AT A MINIMUM  
CONTENT OF 400 PPM.) TANTALUM, AND FLUOROCARBON LINED PIPE.  
THESE CHOICES, ALTHOUGH SOMEWHAT MORE COSTLY THAN CONVENTIONAL  
MATERIALS, AID IN LONG TERM COST REDUCTION BY REDUCING MAIN-  
TENANCE PROBLEMS AND IMPROVING PRODUCT QUALITY.  
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A. THE TYPE GA-1102 AND 1104 PUMPS ARE CENTRIFUGAL  
TYPE, HAVING ALL FLOW-CONTACT SURFACES MADE OF MORE THAN 90  
PERCENT ZIRCONIUM. THESE PUMPS ARE SIMILAR TO OTHER SINGLE  
STAGE, SINGLE SUCTION, RADICALLY SPLIT, CENTER LINE MOUNTED  
CENTRIFUGAL PUMPS. SINCE THESE PUMPS ARE INTENDED FOR USE  
IN THE PRODUCTION OF ACETIC ACID, ALL WETTED SURFACES (CASE,  
COVER, IMPELLER, WEAR RINGS AND THROAT BUSHINGS) WILL BE

CONSTRUCTED OF ZIRCONIUM, ONLY THE BEARING BRACKET WILL BE CONSTRUCTED OF CAST IRON AND THE SHAFT SEALING WILL BE ACCOMPLISHED BY USING A SPECIALLY DESIGNED MECHANICAL SEAL. TWO OF THESE PUMPS WILL HAVE A 6 INCH PIPE SUCTION INLET, 4 INCH PIPE DISCHARGE, AND A 15 AND ONE-HALF DIAMETER IMPELLER. THESE TWO PUMPS ARE DESIGNED TO MOVE 167 M<sup>3</sup>/HR AGAINST A 298.7 METER HEAD WHEN OPERATING AT 3800 RPM. THE THIRD PUMP IN THIS PACKAGE WILL HAVE A 1 AND ONE-HALF INCH PIPE SUCTION INLET AND A 1 INCH PIPE DISCHARGE. OTHER PUMP PARAMETERS ARE NOT KNOWN AT THIS TIME SINCE OTHER OPERATING PARAMETERS WILL BE DETERMINED UPON COMPLETION OF THE PLANT DESIGN.

B. THE VALVES, TUBES, PIPES AND FITTINGS ARE LINED WITH COPOLYMERS OF TETRAFLUOROETHYLENE AND HEXAFLUOROPROPYLENE AND HAVING AN INTERNAL DIAMETER OF 15/16 INCH OR UNDER. THE FLUOROCARBONPOLYMER LINED PIPE REQUIREMENTS ARE SIMILAR TO THOSE DESCRIBED FOR THE ZIRCONIUM PIPE, I.E., WHERE EXTREMELY CORROSIVE CONDITIONS EXIST. THE SUBJECT LINED PIPE IS USED FOR THE TRANSFER LINES THAT ARE TO TRANSPORT IODINE CRYSTALS AND RELATED CATALYST MATERIALS TO THE REACTOR. THE PIPE CONSISTS OF 125 PIECES WITH 1.0 INCH I.D. AND 10 FEET LONG. ALSO INCLUDED ARE 275 LINED FITTINGS.

C. ZIRCONIUM PIPE PREFABRICATED MADE OF COMMERCIALY AVAILABLE ZIRCONIUM ALLOY CONTAINING MORE THAN 50 PERCENT ZIRCONIUM BY WIEGHT IN WHICH THE HAFNIUM CONTENT TO ZIRCONIUM CONTENT IS LESS THAN ONE PART TO 500 PARTS BY WIEGHT. THE SPARE PARTS CONSIST OF PIPE, ELBOWS, STUB-ENDS, BOLTS, GASKETS, ETC. THE ZIRCONIUM PIPE REQUIREMENTS ARE MET THRU THE USE OF PREFABRICATED ISOMETRIC ASSEMBLIES SUITABLE ONLY FOR THE SUBJECT ACETIC ACID PLANT. THESE ARE THE INTERCONNECTING FEEDER AND TRANSFER LINES WHICH HANDLE THE CATALYST

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AND OTHER CORROSIVE PRODUCTS IN AND AROUND THE PROMOTER REACTOR. THE ZIRCONIUM PIPE AND REQUIRED FITTINGS ARE DESCRIBED IN THE FOLLOWING TABLE:

DIAMETER	24"	10"	8"	6"	4"	3"	2"	1.5"	1"	0.75"	0.5"
LINEAR FT.	15	62	25	140	80	80	40	30	230	5	50
NO. OF	5	17	2	22	30	12	14	14	55	-	80
FITTINGS											

D. THE PROMOTER REACTOR CONDENSER IS A SHELL AND TUBE TYPE, CARBON STEEL SHELL AND 173 LBS. TANTALUM METAL ALLOY TUBES CONTAINING MORE THAN 60 PERCENT TANTALUM BY WIEGHT. THE CONDENSERS MAIN DIMENSIONS ARE 216 MM SHELL DIAMETER, 2.4 METER TUBE LENGTH, AND 3.6 SQ. METERS HEAT TRANSFER AREA. THE PROMOTER

SUBCOOLER SHELL AND TUBE TYPE, CARBON STEEL SHEET AND 64 LBS TANTALUM METAL ALLOY TUBES CONTAINING MORE THAN 60PERCENT TANTALUM BY WEIGHT. THE MAIN DIMENSIONS ARE 168 MM SHELL DIAMETER, 2.4 METER TUBE LENGTH, AND 0.7 SQUARE METERS HEAT TRANSFER AREA. BOTH PIECES OF EQUIPMENT ARE FABRICATED FROM THE SAME BASIC MATERIALS OF CONSTRUCTION, I.E. CARBON STEEL AND TANTALUM. THE TANTALUM IS USED IN THE FORM OF TUBING OR AS PROTECTIVE LINING FOR SOME OF CARBON STEEL PARTS. THE TANTALUM TUBING FOR THE REACTOR CONDENSER CONSISTS OF 26 TUBES WITH 0.75 INCH O.D., 0.015 INCH WALL THICKNESS, AND ABOUT 97 INCHES LONG. THE TUBING FOR THE SUBCOOLER CONSISTS OF 6 TUBES WITH 0.625 INCH O.D., 0.020 WALL THICKNESS, AND ABOUT 97 INCHES LONG.

EM THE DC-1402 PROMOTER REACTOR WITH AGITATOR FABRICATED OF COMMERCIALY AVAILABLE ZIRCONIUM ALLOY CONTAINING MORE THAN 50 PERCENT ZIRCONIUM BY WEIGHT IN WHICH THE RATIO OF HAFNIUM CONTENT TO ZIRCONIUM CONTENT IS LESS THAN ONE PART TO 500 PARTS BY WEIGHT. THE REACTOR'S MAIN DIMENSIONS ARE 1524MM (60 INCHES) DIAMETER AND 1905 MM (75 INCHES) TANGENT TO TANGENT, AND WEIGHTS 4,950 LBS. THE REACTOR IS DESIGNED TO OPERATE AT 146 DEGREES C TEMPERATURE AND 5.7 KG/CM<sup>2</sup> PRESSURE. THE PROMOTER REACTOR IS THE REACTION VESSEL IN WHICH CARBON MONOXIDE AND METHANOL ARE CONTINUOUSLY MIXED WITH A RHODIUM IODINE CATALYST TO FORM ACETIC ACID. THE RAW ACETIC ACID

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IS CONTINUOUSLY WITHDRAWN FROM THE REACTION VESSEL ALONG WITH SPENT CATALYST RESIDUES. THE RAW ACETIC ACID IS SENT THRU A FINISHING CYCLE WHILE THE CATALYST RESIDUES ARE SENT TO RECLAMATION FOR POSSIBLE RECYCLING. THE START-UP HEATER IS BASICALLY A CARBON STEEL SHELL AND TUBE SHEET CONSTRUCTION CONTAINING 54 ROLLED IN PLACE ZIRCONIUM TUBES. THE TUBES ARE 0.75 INCH O.D. WITH 0.065 INCH WALL THICKNESS AND 7.3 METERS (288 INCHES) LONG. THE FRACTIONATING COLUMN TRAYS, BOLTS, AND NUTS MADE OF COMMERCIALY AVAILABLE ZIRCONIUM ALLOY 525 LBS CONTAINING MORE THAN 50 PERCENT ZIRCONIUM BY WEIGHT IN WHICH THE RATIO OF THE HAFNIUM CONTENT TO ZIRCONIUM CONTENT IS LESS THAN ONE PART TO 500 PARTS BY WEIGHT. THE DESCRIPTION SUGGESTS THAT 14 TRAYS AND 25 BOLTS AND NUTS RESPECTIVELY ARE REQUIRED FOR THE ASSEMBLY OF A FRACTIONATING DISTILLATION COLUMN USED IN THE FIRST PURIFICATION STEP OF THE RAW ACETIC ACID. ALL 64 PIECES ARE MADE OF ZIRCONIUM.

F. THE CONTROL VALVES ARE 3/4" - 6"  
BLOCK COCK VALVES ARE ONE-HALF " - 10" AND THE  
BALL OR SWING CHECK VALVES ARE 1 AND ONE-HALF"-6"

ALL OF THESE VALVES ARE OF A BASIC DESIGN EXCEPT FOR THE FACT THAT ALL FLOW CONTACT SURFACES ARE CONSTRUCTED OF ZIRCONIUM METAL. NON FLOW CONTACT SURFACES ARE MADE OF CARBON STEEL. THESE VALVES ARE NOT DESIGNED SPECIFICALLY FOR USE IN NUCLEAR REACTORS, FITTED WITH BELLOWS SEALS, NOR DESIGNED FOR USE AT TEMPERATURES BELOW - 328 DEGREES F. SUBJECT VALVES ARE I/L RATED SOLELY BECAUSE THEIR FLOW CONTACT SURFACES ARE CONSTRUCTED OF ZIRCONIUM METAL.

4. THE UNITED STATES AUTHORITIES CONSIDER THIS EXPORT REASONABLE AND APPROPRIATE FOR THE STATED CIVIL NON-NUCLEAR END USE. THEY WISH TO APPROVE IT UNDER THE URGENCY PROCEDURE SET FORTH IN COCOM DOC. REG (73)3, PARAGRAPH 4(B), AND WOULD APPRECIATE THE VIEWS OF MEMBER GOVERNMENTS. URGENCY PROCEDURE REQUESTED AS APPLICANT'S CONTRACT OBLIGATED THEM TO SEVERE PENALTIES IF PRELIMINARY PROJECT DOCUMENT IS NOT SUBMITTED BY THE APPLICANT BY JULY 1, 1974. RUSH

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